

REMARKS

Upon entry of this Amendment, claims 1 and 4-20 will be pending in this application. Claims 10-13 have been withdrawn from consideration. Claims 14-20 are newly added.

Claim Objections

Claim 7 is objected to because of informalities. Claim 7 has been amended to correct the minor grammatical error in line 2 of claim 7 after "wherein." The word "said" is added to read "wherein said dielectric plate..." Therefore, Applicants respectfully request withdrawal of the objection to claim 7.

Claim Rejections – 35 U.S.C. § 102

Claims 1 and 6-7 have been rejected under 35 U.S.C. § 102 (b) as being anticipated by Tomoyasu *et al.* (US Pat. No. 5,900,103). Applicants respectfully traverse this rejection for at least the following reasons.

Claim 1 has been amended to recite, *inter-alia*, "a second vacuum pump connected to said gas-introducing part so as to evacuate the reactant gas from said gas-introducing part."

The Office Action contends that Tomoyasu *et al.* shows the invention as claimed including a plasma processing apparatus 700 for applying a plasma process to an object to be processed, the plasma process apparatus comprising: a process chamber 710; a gas introducing part connected to the process chamber including inlet port 738A and outlet port 750A; a first vacuum pump connected to the process chamber through exhaust line 760; and a gas-evacuating arrangement 750A connected to the gas introducing part to evacuate the reactant gas from the gas-introducing part (figs. 35 and 37 and col. 16, line 42 to col. 17, line 25).

Tomoyasu *et al.* describes, referring to Figures 35 and 37, a plasma CVD apparatus 700 a process chamber 710. In Tomoyasu *et al.*, a process gas supply line is provide to supply gas into the process chamber 710. The supply line is provided with a vaporizer 732. The vaporizer has an inlet 738 communicating with a liquid supply 734 and an outlet 740 communicating with the hollow portion of electrode 730. A bypass 750 and a stop valve 752 are attached to the passage the outlet 740 of the vaporizer. The bypass 750 is communicated with clean up unit via bypass valve 754. The clean up unit has a burner to remove unnecessary gas components (see, col. 17, lines 54-57 in Tomoyasu *et al.*). However, Tomoyasu *et al.* is silent about the use of a second vacuum pump connected to the gas-

introducing part so as to evacuate the reactant gas from the gas-introducing part. Indeed, in Tomoyasu *et al.* the unnecessary gas components are removed by a burner unit whereas in the invention as recite in claim 1 the reactant gas is evacuated using a vacuum pump. The use of a vacuum pump to evacuate the reactant gas allows for a rapid and efficient evacuation of the reactant gas remaining in the gas-introducing part. Consequently, Tomoyasu *et al.* does not disclose, teach or suggest the subject matter recited in claim 1.

Therefore, Applicants respectfully submit that claim 1 and claims 6 and 7 dependent therefrom are patentable and respectfully request that the §102 (b) rejection of claims 1, 6 and 7 be withdrawn.

Claim Rejections – 35 U.S.C. § 103

Claims 2 and 3 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Tomoyasu *et al.* (US Pat. No. 5,900,103). Applicants respectfully traverse this rejection for at least the following reasons.

The subject matter recited in claim 2 is now recited in amended claim 1. Therefore, claim 2 has been cancelled without prejudice. The subject matter recited in claim 3 is now recited in newly added claim 14. Therefore, claim 3 has been cancelled without prejudice.

The Office Action concedes that Tomoyasu *et al.* fails to teach a second vacuum pump connected to said gas-introducing part as recited in claim 2, and a bypass passage which connects said gas-introducing part to said first vacuum pump by bypassing said process chamber as recited in claim 3. The statement of the Office Action that in view of the disclosure provided by Tomoyasu *et al.* it would have been obvious to one of ordinary skill in the art to connect the gas-introducing part to a second pump or via a bypass to the first vacuum pump is based on hindsight reasoning while reading Applicants specification. Indeed, there is no suggestion in Tomoyasu *et al.* to make these modifications.

As set forth in MPEP 2143.01, *In re Kotzab*, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1318 (Fed. Cir. 200) Court reversed obviousness rejection involving a technologically simple concept because there was no finding as to the principle or specific understanding within the knowledge of a skilled artisan that would have motivated the skilled artisan to make the claimed invention. Moreover, in *Al-Site Corp. v. VSI Int'l Inc.*, 174 F.3d 1308, 50 USPQ2d 1161 (Fed. Cir. 1999) the level of skill in the art cannot be relied upon to provide the suggestion to combine references.

Therefore, Applicants respectfully submit that claim 2 (rewritten in independent form as claim 1) and claim 3 (rewritten in independent form as claim 14) are patentable and respectfully request that the § 103 (a) rejection of claims 2 and 3 be withdrawn.

Claims 4 and 5 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Tomoyasu *et al.* (US Pat. No. 5,900,103) in view of Fairbairn *et al.* (US Pat. No. 5,614,055). Applicants respectfully traverse this rejection for at least the following reasons.

The Office Action concedes that Tomoyasu *et al.* lacks anticipation of wherein said gas-introducing part has a plurality of circumferentially arranged nozzles through which the reactant gas is introduced into said process chamber. The Office Action contends that Fairbairn *et al.* discloses a planar showerhead having multiple nozzles in an opposed relation to the substrate. Claim 4 recites, *inter-alia*, "wherein said gas-introducing part has an annular shape and is incorporated into a sidewall of said process chamber..." Therefore, contrary to Fairbairn *et al.* where the showerhead has a plural spray nozzle opening facing the wafer (see, col. 13, lines 40-45), in the invention recited in claim 4, the gas-introducing part is incorporated into a sidewall of the process chamber. Therefore the gas-introducing part recited in claim 4 is not facing the substrate. Consequently, neither Tomoyasu *et al.* nor Fairbairn *et al.* disclose, teach or suggest alone or in combination the subject matter recited in claim 4.

Therefore, Applicants respectfully submit that claim 4 and claim 5 which is dependent therefrom are patentable and respectfully request that the § 103 (a) rejection of claims 4 and 5 be withdrawn.

Claims 1, 6, 8 and 9 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Tei *et al.* (2002/0011215 A1) in view of Tomoyasu *et al.* (US Pat. No. 5,900,103). Applicants respectfully traverse this rejection for at least the following reasons.

The Office Action contends that Tei *et al.* shows the invention as claimed including a plasma processing apparatus including a first vacuum pump connected to said process chamber through exhaust 102. However, the Office Action concedes that Tei *et al.* fails to disclose a gas-evacuating arrangement connected to said gas-introducing part so as to evacuate the reactant gas from said gas-introducing part. The Office Action States that Tomoyasu *et al.* discloses a gas evacuating arrangement (750A) connected to a gas-introducing part so as to evacuate the gas from the gas-introducing part. Applicants submit

that Tomoyasu *et al.* is silent about providing a second vacuum pump connected to the gas-introducing part so as to evacuate the reactant gas from the gas-introducing part. In addition as admitted in the Office Action, Tomoyasu *et al.* lacks anticipation of wherein said gas-evacuating arrangement comprises a second vacuum pump connected to said gas-introducing part. Therefore, neither Tei *et al.* nor Tomoyasu *et al.* disclose, teach or suggest alone or in combination, *inter-alia*, "a second vacuum pump connected to said gas-introducing part so as to evacuate the reactant gas from said gas-introducing part."

Therefore, Applicants respectfully submit that claim 1 and claims 6, 8 and 9 which are dependent therefrom are patentable and respectfully request that the § 103 (a) rejection of claims 1, 6, 8 and 9 be withdrawn.

Claims 2 and 3 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Tei *et al.* (2002/0011215 A1) in view of Tomoyasu *et al.* (US Pat. No. 5,900,103). Applicant respectfully traverse the rejections for at least the following reasons.

The subject matter recited in claim 2 is now recited in amended claim 1. Therefore, claim 2 has been cancelled without prejudice. The subject matter recited in claim 3 is now recited in newly added claim 14. Therefore, claim 3 has been cancelled without prejudice.

The Office Action concedes that Tei *et al.* and Tomoyasu *et al.* fail to teach a second vacuum pump connected to said gas-introducing part as recited in claim 2, and a bypass passage which connects said gas-introducing part to said first vacuum pump by bypassing said process chamber as recited in claim 3. As noted previously, The statement of the Office Action that in view of the disclosure provided by Tomoyasu *et al.* it would have been obvious to one of ordinary skill in the art to have a second vacuum pump to evacuate the gas-introducing part is based on hindsight reasoning while reading Applicants specification.

Similarly, the statement of the Office Action that in view of the disclosure provided by Tomoyasu *et al.* it would have been obvious to one of ordinary skill in the art to connect the gas-introducing part via a bypass to the first vacuum pump is based on hindsight reasoning while reading Applicants specification. Indeed, there is no suggestion in Tomoyasu *et al.* to make these modifications.

Therefore, Applicants respectfully submit that claims 2 and 3 are patentable and respectfully request that the § 103 (a) rejection of claims 2 and 3 be withdrawn.

Claims 4 and 5 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Tei *et al.* (2002/0011215A1) in view of Tomoyasu *et al.* (US Pat. No. 5,900,103) in view of Fairbairn *et al.* (US Pat. No. 5,614,055). Applicants respectfully traverse this rejection for at least the following reasons.

The Office Action concedes that Tei *et al.* and Tomoyasu *et al.* lack anticipation of wherein said gas-introducing part has a plurality of circumferentially arranged nozzles through which the reactant gas is introduced into said process chamber. The Office Action contends that Fairbairn *et al.* discloses a planar showerhead having multiple nozzles in an opposed relation to the substrate. Claim 4 recites, *inter-alia*, "wherein said gas-introducing part has an annular shape and is incorporated into a sidewall of said process chamber..." Therefore, as stated previously, contrary to Fairbairn *et al.* where the showerhead has a plural spray nozzle opening facing the wafer (see, col. 13, lines 40-45), in the invention recited in claim 4, the gas-introducing part is incorporated into a sidewall of the process chamber. Therefore the gas-introducing part recited in claim 4 is not facing the substrate. Consequently, Tei *et al.*, Tomoyasu *et al.* and Fairbairn *et al.* do not disclose, teach or suggest alone or in combination the subject matter recited in claim 4.

Therefore, Applicants respectfully submit that claims 4 and claim 5 which is dependent therefrom are patentable and respectfully request that the § 103 (a) rejection of claims 4 and 5 be withdrawn.

Claims 14-20 are newly added. Support for the claim language may be found throughout the specification. Claim 14 corresponds to claim 3. As stated previously none of the relied upon references disclose teach or suggest the subject matter recited in claim 3 which is rewritten in independent form as claim 14. Therefore, Applicants respectfully submit that claim 14 and claims 15-20 which depend therefrom are deemed allowable for at least the reasons stated above.

CONCLUSION

In view of the foregoing, the claims are now in form for allowance, and such action is hereby solicited. If any point remains in issue which the Examiner feels may be best resolved through a personal or telephone interview, he is kindly requested to contact the undersigned at the telephone number listed below.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached Appendix is captioned **"Version with markings to show changes made"**.

All objections and rejections having been addressed, it is respectfully submitted that the present application is in a condition for allowance and a Notice to that effect is earnestly solicited.

Respectfully submitted,
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APPENDIX

version with markings to show changes made

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IN THE CLAIMS

The claims have been amended as follows:

1. (Amended) A plasma processing apparatus for applying a plasma process to an object to be processed, the plasma processing apparatus comprising:

a process chamber in which the object to be processed is subjected to the plasma process;

a gas-introducing part connected to said process chamber so as to introduce a reactant gas into said process chamber;

a first vacuum pump connected to said process chamber so as to evacuate gas from said process chamber so that said process chamber is maintained at a negative pressure; and

a [gas-evacuating arrangement] second vacuum pump connected to said gas-introducing part so as to evacuate the reactant gas from said gas-introducing part.

7. (Amended) The plasma processing apparatus as claimed in claim 6, wherein said dielectric plate has an inlet port connected to said gas passage so as to supply the reactant gas to said gas passage, and said gas passage has an outlet port to which said [gas-evacuating arrangement] second vacuum pump is connected.

End of Appendix